

Remarks/Arguments

Claims 1-2, 4-23, 25-38, 40, 42-43, 46-56 and 58-65 are pending in the above-captioned application, claims 3, 24, 39, 41 and 45 having been previously withdrawn. Claims 44 and 57 have been cancelled without prejudice or disclaimer herein. Claim 65 has been added herein to incorporate the limitations of allowable claim 61 into original independent claim 23, and thus no new matter is entered. Claims 1 and 23 are amended herein to more particularly point out that the surfaces are adhered together substantially by van der Waals forces between the nanofibers and the secondary surface(s) as suggested by the Examiner. Independent claims 40 and 43 have been amended to incorporate allowable subject matter from dependent claims 61 and 57, respectively, e.g., to recite that the nanofibers comprise silicon nanofibers, and thus no new matter is entered. Claims 46, 55 and 62-64 have been amended to correct some minor lack of antecedent basis issues, and claim 58 has been amended to depend from claim 43 in light of the cancellation of claim 57 herein.

Rejections Under 35 U.S.C. §112

Claim 44 was objected for being unclear. This claim has been cancelled without prejudice or disclaimer herein to render moot such grounds of objection.

Rejections Under 35 U.S.C. §§ 102 and 103

Claims 1, 2, 4-20, 22, 23, 25-38, 40, 42-44 and 46-56 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by, or in the alternative under 35 U.S.C. §103(a) as obvious over, Knowles et al. U.S. Pat. Pub. 2004/0071870 (“Knowles”).

The present invention of amended independent claims 1 and 23 is directed to the use of nanofibers, and particularly contact with side surfaces of nanofibers, to join articles through the resultant van der Waals forces, wherein the contacting adheres the articles together substantially by van der Waals forces between the nanofibers and the secondary surface of at least one of the articles. Applicant respectfully points out than in each and every embodiment, figure and/or description contained within Knowles, the carbon nanotube arrays purported to be used as an adherent material are directly normal

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to the surface to which they would adhere, meaning that the nanotubes would, at best, contact the mating surface at the end. To the extent that any incidental side contact would occur between the carbon nanotube arrays and the surface to which they would adhere as alleged by the Examiner, there is no description in Knowles that such side contact would adhere the surfaces together substantially by van der Waals forces as presently claimed in claims 1 and 23. Accordingly, Applicant respectfully submits that the rejection based upon Knowles is overcome, and its withdrawal is respectfully requested. In addition, claims 40 and 43 have now been rewritten to include all the limitations of allowable claims 61 and 57, respectively, and thus these claims should be in condition for allowance as well.

Claims 1, 2, 4-23, 25-38, 40, 42-44, 46-56 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Tomanek et al. PCT Publication WO 99/40812 (“Tomanek”). Applicant respectfully submits that the Tomanek reference fails to teach or disclose the presently claimed invention. In particular, Tomanek appears to be directed to a “hook and loop” configuration for joining articles together that is virtually indistinguishable from Velcro®. This relies upon a mechanical linking of two hooks or loops in order to join two articles together. The present invention of independent claims 1 and 23 is directed to the use of nanofibers, and particularly contact with side surfaces of nanofibers, to join articles through the resultant van der Waals forces, wherein the contacting adheres the first surface to the second surface substantially by van der Waals forces between the nanofibers and the second surface. Tomanek requires that both surfaces include nanoscale fastening elements to provide a mechanical linking arrangement to join the articles together. Accordingly, Applicant respectfully submits that the rejection based upon Tomanek is overcome, and its withdrawal is respectfully requested. In addition, claims 40 and 43 have now been rewritten to include all the limitations of allowable claims 61 and 57, respectively, and thus these claims should be in condition for allowance as well.

Claims 1, 2, 8-12, 22, 23, 25-38, 40, 42-44, 46 and 56 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Lee et al. 2004/0098023 (“Lee”). The rejection on this basis is respectfully traversed. Applicant respectfully points out that

Lee is directed to a vaso-occlusive device for occlusion of a body cavity. The vaso-occlusive device includes a core member and a fibrous structure coupled to the core member. The fibrous structure comprises strands of polymer nanofibers that are typically fabricated by an electrospinning process (e.g., paragraphs [0040] and [0041] of Lee). The architecture of the fibrous structure may provide a high level of surface area to which cells may attach (e.g., paragraph [0016]). Applicant respectfully submits that Lee has little or no relation to the use of nanofibers as the adhesive element for joining two (or more) articles together through van der Waals interactions. As noted above, the present invention of independent claims 1 and 23 is directed to the use of nanofibers, and particularly contact with side surfaces of nanofibers, to join articles through the resultant van der Waals forces, wherein the contacting adheres the first surface to the second surface substantially by van der Waals forces between the nanofibers and the second surface. Lee does not recognize or teach this aspect of the presently claimed invention. Accordingly, Applicant respectfully submits that the rejection based upon Lee is overcome, and its withdrawal is respectfully requested. In addition, claims 40 and 43 have now been rewritten to include all the limitations of allowable claims 61 and 57, respectively, and thus these claims should be in condition for allowance as well.

Claims 1, 2, 4-12, 14-20, 23 and 25-38 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by, or in the alternative under 35 U.S.C. §103(a) as obvious over, Nakayama et al. U.S. Pat. No. 6,669,256 (“Nakayama”). As discussed above, the present invention of independent claims 1 and 23 is directed to the use of nanofibers, and particularly contact with side surfaces of nanofibers, to join two articles through the resultant van der Waals forces, wherein the contacting adheres the articles together substantially by van der Waals forces between the nanofibers and the secondary surface of at least one of the articles. Applicant respectfully points out that in Nakayama, the nanotube nanotweezers purported to be used as an adherent device do not operate in the manner of the presently claimed invention.

For example, Figure 4 of Nakayama shows nanotweezers 2 that grip a nano-substance 16. A direct-current voltage is applied to the nanotubes 8 and 9 from the lead wires 10, 10. Positive and negative charges are accumulated in the tip end portions

8a and 9a, and the electrostatic attractive force of these positive and negative charges causes the tip end portions 8a and 9a to close with a degree of opening corresponding to the applied voltage, so that the nano-substance 16 is gripped and held in place between the tip end portions. Applicant respectfully submits that this has little or no relation to the use of nanofibers as the adhesive element for joining articles together through van der Waals interactions as claimed in claims 1 and 23. Accordingly, Applicant respectfully submits that the rejection based upon Nakayama is overcome, and its withdrawal is respectfully requested.

Allowable Subject Matter

Claims 57-60 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims. As discussed above, the limitations of claim 57 have been incorporated into independent claim 43 from which it depends, and thus claim 43, and dependent claims 46-56 and 58-60 which depend therefrom, should now be in condition for allowance and passed to issuance.

Claims 61-64 were indicated to be allowable if rewritten to overcome the rejections under 35 U.S.C. Section 112 , 2nd paragraph set forth in the Office Action, and to include all the limitations of the base claim and any intervening claims. As discussed above, claim 61 has been rewritten in independent form to include all the limitations of independent claim 1 from which it depended (in the alternative) and to remove the grounds for the Section 112 rejection, and thus independent claim 61, and dependent claims 62-64 which depend therefrom, should now be in condition for allowance.

Finally, new claim 65 has been submitted to include all the limitations of allowable dependent claim 61 and original independent claim 23 from which claim 61 depended (in the alternative), and thus new claim 65 should be allowed and passed to issuance as well.

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Power of Attorney

Applicant submitted a Power of Attorney document in this application on October 29, 2004, and resubmitted a copy of that Power of Attorney document on May 23, 2005 in connection with its filing of a Request for Continued Examination in this case, to appoint the undersigned and to change the correspondence address for this application to the address of the undersigned associated with customer number 33140. The undersigned would be grateful if the Examiner would kindly acknowledge submission of these Power of Attorney documents in this matter and send all future correspondence to the address of the undersigned referenced below.

Respectfully submitted,


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